

Going wireless

Adding wireless networking to a PC or notebook isn't as tricky as it sounds. Chris Finnamore explains how to get connected

STATUS LIGHTS Most adaptors have one or more status lights. The manual will explain what they indicate

PCI INTERFACE An adaptor using the PCI interface should fit any desktop PC built in the past 10 years, provided its PCI slots aren't already full

PC CARD ADAPTOR

All PC Card wireless adaptors need a 32-bit CardBus slot to work. PC Card adaptors look neater than their USB counterparts when fitted in your notebook

ANTENNA PCI cards usually have removable antennas, so you can unscrew the standard one and fit a high-gain aerial for better reception

USB ADAPTOR USB adaptors are easy to install, but if you want to use a 54Mbit/s 802.11g wireless connection, you will need a USB2 port on your computer

The fastest wireless networking standard transfers data at 54 megabits per second (Mbit/s), but some proprietary systems run faster. If your router has a mode that's faster than 54Mbit/s, you'll probably need to buy your adaptors from the same manufacturer to use the non-standard speed.

Most wireless network adaptors use one of three interfaces: PCI, USB or PC Card (commonly called PCMCIA). USB adaptors and PC Cards plug into the appropriate port on your computer, but you'll need to take the cover off your desktop PC to install a PCI card.

The adaptor you choose depends on whether you have a notebook or desktop PC, and what free ports or slots it has. Different adaptor types also have their own advantages and disadvantages.

USB wireless network adaptors work with desktop and notebook PCs, and can be moved easily between the two. However, computers built before late 2001 typically have USB1.1 ports with a maximum transfer speed of 12Mbit/s. The 802.11g wireless standard runs at 54Mbit/s, so if you have only USB1.1 ports your

wireless network will be limited to the 11Mbit/s 802.11b standard.

PCMCIA wireless adaptors fit into a notebook's PC Card slot, but won't work with older 16-bit slots. Provided your notebook was built after 1996, you should have a suitable 32-bit CardBus PC Card slot. Unless you already use this for other PC Card devices, such as a cellular modem, buy a PC Card wireless adaptor. It's neater than a USB adaptor and won't take up one of your valuable USB ports.

PCI adaptors fit into a PCI expansion slot in your desktop PC. Fitting a PCI wireless card means you don't have to use up a USB port. What's more, PCI cards often have longer-range antennas, and many allow you to upgrade the antenna to improve reception further.

INSTALLATION

The software you need to install depends on the version of Windows you have, but the physical installation processes for USB, PC Card and PCI adaptors are the same no matter which operating system you use.

INTRODUCTION

Wireless networks are springing up in homes all over the country, and the number of public hotspots has risen dramatically in the past few years. However, being near a wireless network is not much use if your PC or notebook can't connect to it.

Most modern notebooks come equipped with wireless network adaptors, but if your notebook is more than a couple of years old, you'll need to add one. The vast majority of desktop PCs come without wireless networking built in, but upgrading them is fairly easy.

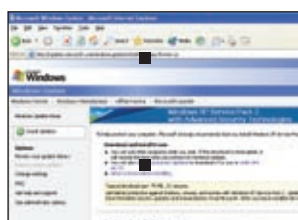
In this month's *Upgrade Workshop* we'll show you how to add wireless networking to a desktop or notebook computer and connect it to a hotspot or your home network. If you need to set up a wireless router first, read our wireless router upgrade guide (from *Upgrade Shopper*, November 2005) on this month's cover disc.

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Compatibility checklist



OPERATING SYSTEM

Windows XP has native support for wireless networking, but Service Pack 2's Wireless Zero Configuration service makes setup easier. Visit <http://windows.update.microsoft.com> to get SP2. If your adaptor has a proprietary high-speed mode, you'll need to install the manufacturer's configuration software. Windows 98 and Me users will also need this.

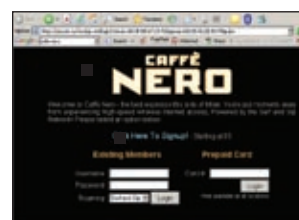
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INTERFACES

If you want to use a USB 802.11g adaptor at maximum speed, you will need USB2 ports. To use a PC Card adaptor, your notebook must support the 32-bit CardBus PCMCIA standard. Check your system's specifications and speak to the manufacturer if you're not sure. PCI cards work only in desktop PCs. Make sure you have a spare PCI slot before you buy a card.

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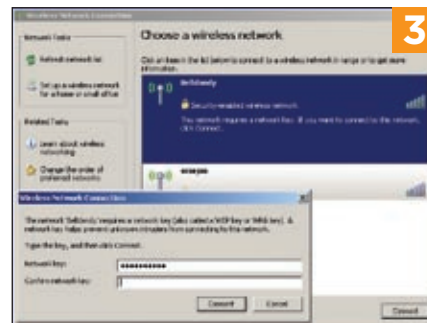
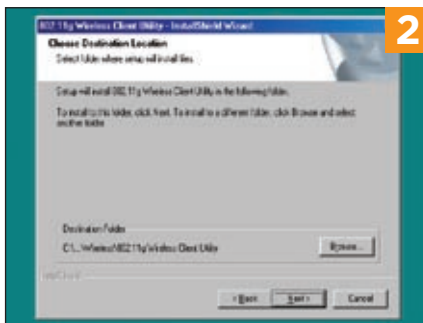


INFRASTRUCTURE

You'll also need a wireless network to log on to. Make sure you have a wireless router that is set up and working correctly. To find wireless hotspots in your area, try searching websites such as www.wi-fizone.org/zonelocator.asp. Some cafés and pubs offer wireless internet access, but you might have to pay a fee.

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1 PLUG IN THE ADAPTOR

In some cases, you may need to install drivers before you insert your network adaptor. Check the manufacturer's instructions to make sure, and reverse steps 1 and 2 if necessary.

USB AND PC CARD ADAPTORS

You can plug in USB or PC Card adaptors while your PC is switched on. Simply plug a USB adaptor into a spare USB port. You may need an extension cable to avoid blocking the port next to it, but USB adaptors often come with these.

To install a PC Card adaptor in your notebook, find the PC Card slot – it's usually on the side. If you have two slots, plug the card into the top one to stop the antenna blocking the other slot. If your adaptor has an adjustable antenna, position it to get the best wireless signal.

PCI ADAPTORS

When installing a PCI adaptor, your desktop PC must be switched off. Turn off the switch on your PC's power supply or unplug the AC power cable. Before you start, and every now and then as you work, touch an unpainted part of a radiator to discharge any static electricity you have built up. Open the PC case, referring to the manufacturer's instructions if need be, to access the PCI slots. Find a spare slot, but bear in mind that you may not be able to use the one adjacent to your graphics card without causing it to overheat.

There should be a blanking plate that lines up with the slot at the back of your case. Remove this by undoing the screw that holds it in place. Now insert your PCI card into the slot by lining

up the edges with the slot and sliding it firmly into place, as shown in picture 1. Screw the PCI card's backing plate to your PC's chassis to keep the card secure. Finally, screw the supplied antenna on to the threaded antenna attachment on the back of the card.

2 INSTALL SOFTWARE

Almost all wireless network adaptors need drivers before they'll work in any version of Windows. Old versions of Windows also need a utility to manage the wireless connection, but Windows XP has this built in.

WINDOWS XP

Follow the manufacturer's instructions to install your adaptor's driver or visit its website to get hold of the latest version.

Many adaptors also come with a wireless utility program that helps you configure them. You don't usually need to install this. If you have Windows XP, it's often easier to let Windows manage your wireless connection, particularly if you have Service Pack 2 with its easy-to-use Wireless Zero Configuration service. This is also helpful if you have adaptors from several manufacturers, as you'll need to get to grips with only one configuration interface.

However, some adaptors can be configured only with their own utility program. The installation instructions should make this clear. We'd recommend using Windows to configure your wireless card if you have Service Pack 2, unless this stops proprietary features, such as a multichannel high-speed mode, working.

WINDOWS 98 AND ME

Windows 98 and Me don't have native support for wireless networking, so you will need to install your adaptor's wireless configuration utility to manage the connection. Follow the installation instructions to install drivers for your adaptor, making sure you choose to install any configuration programs. During the installation you may be asked for your Windows CD, so make sure you have it to hand.

3 CONNECT TO THE NETWORK

Now that your adaptor is installed, a wireless networking icon should appear in your taskbar. Double-click this to open the Windows Wireless Configuration page or your manufacturer's configuration utility. Either application should display a list of the available wireless networks.

Depending on your software, you should see the name of each network, the signal strength and whether or not the network is encrypted. If more than one network is available, make sure you select your own or one that you have permission to use.

If the wireless network is encrypted, you will be asked for your pass key. This can be a hexadecimal number or a string of ASCII characters such as 'mywirelessnet'. If you're connecting to a hotspot, you should have been given this. If you're connecting to your own network, you specified this pass key when configuring your router. If you've forgotten it, access your router's wireless configuration page from another PC on your network. 

Testing and troubleshooting

Once you have installed your adaptor, you should be able to detect any local wireless networks by using the wireless configuration program in the taskbar. Connect to your preferred network. You should be able to see any network resources in My Network Places, and access the internet with your browser.



Adding a third-party antenna to your PCI wireless adaptor card may boost reception

Check that your connection speed is near the maximum for your network type: 11Mbit/s for 802.11b or 54Mbit/s for 802.11g. Your wireless configuration program should show the link speed. If you have Windows XP, you can right-click the taskbar and run Task Manager. Look on the Network tab for your adaptor's link speed.

If you're not asked for a pass key when you first connect to your network, it is unencrypted. It's important to protect your internet connection from unauthorised use as you could be held responsible for any access to illegal material. The wireless router upgrade guide on this month's cover disc explains encryption.

If you have trouble connecting or your network is slow, you may have a weak signal. Open your wireless connection manager and check that you have a steady connection. Third-party antennas help boost wireless signals and can be fitted to many routers and PCI cards.

If you are using a USB adaptor and have a 54Mbit/s 802.11g wireless network but can

connect only at 11Mbit/s, your USB2 port may be running in Full-Speed (12Mbit/s) mode. Check your PC's manual to see how to enable Hi-Speed mode in the BIOS. If you don't have this option, your PC may support only USB1.1. For around £10 including VAT you can buy a USB2 PCI card for a desktop PC, which enables your USB adaptor to run at full speed. PC Card USB2 adaptors cost around £20 including VAT, but we recommend that notebook users buy a PC Card wireless adaptor in the first place.

If you're running Internet Explorer for the first time on your Windows 98 or Me PC, the Internet Connection Wizard will run even if your wireless network connection is set up. Select 'I want to connect through a Local Area Connection (LAN)' and click Next. Now select 'Connect through a Local Area Network (LAN)', and click Next. In the next screen, make sure all the boxes are unchecked, click Next and select No when asked if you want to set up an email account. Click Next and Finish.